

ARX-1000 Hardware Installation Guide

810-0006-00



Publication Date

This manual was published on August 17, 2011.

Legal Notices

Copyright

Copyright 2004-8/17/11, F5 Networks, Inc. All rights reserved.

F5 Networks, Inc. (F5) believes the information it furnishes to be accurate and reliable. However, F5 assumes no responsibility for the use of this information, nor any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent, copyright, or other intellectual property right of F5 except as specifically described by applicable user licenses. F5 reserves the right to change specifications at any time without notice.

Trademarks

3DNS, Access Policy Manager, Acopia, Acopia Networks, Advanced Client Authentication, Advanced Routing, APM, Application Security Manager, ARX, AskF5, ASM, BIG-IP, Cloud Extender, CloudFucious, CMP, Data Manager, DevCentral, DevCentral [DESIGN], DNS Express, DSC, DSI, Edge Client, Edge Gateway, Edge Portal, EM, Enterprise Manager, F5, F5 [DESIGN], F5 Management Pack, F5 Networks, F5 World, Fast Application Proxy, Fast Cache, FirePass, Global Traffic Manager, GTM, IBR, Intelligent Browser Referencing, Intelligent Compression, IPv6 Gateway, iApps, iControl, iHealth, iQuery, iRules, iRules OnDemand, iSession, IT agility. Your way., L7 Rate Shaping, LC, Link Controller, Local Traffic Manager, LTM, Message Security Module, MSM, Netcelera, OneConnect, Packet Velocity, Protocol Security Module, PSM, Real Traffic Policy Builder, ScaleN, SSL Acceleration, StrongBox, SuperVIP, SYN Check, TCP Express, TDR, TMOS, Traffic Management Operating System, TrafficShield, Transparent Data Reduction, VIPRION, vCMP, WA, WAN Optimization Manager, WANJet, WebAccelerator, WOM, and ZoneRunner, are trademarks or service marks of F5 Networks, Inc., in the U.S. and other countries, and may not be used without F5's express written consent.

All other product and company names herein may be trademarks of their respective owners.

Patents

This product may be protected by U.S. Patents 7,877,511; 7,958,347. This list is believed to be current as of August 17, 2011.

Export Regulation Notice

This product may include cryptographic software. Under the Export Administration Act, the United States government may consider it a criminal offense to export this product from the United States.

RF Interference Warning

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This unit generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Any modifications to this device, unless expressly approved by the manufacturer, can void the user's authority to operate this equipment under part 15 of the FCC rules.

Canadian Regulatory Compliance

This Class A digital apparatus complies with Canadian ICES-003.

Standards Compliance

This product conforms to the IEC, European Union, ANSI/UL and Canadian CSA standards applicable to Information Technology products at the time of manufacture.

Acknowledgments

This product includes software from several third-party vendors. Each vendor is listed below with the applicable copyright.

Copyright (c) 1990, 1993, 1994, 1995 The Regents of the University of California. All rights reserved.

Copyright 2000 by the Massachusetts Institute of Technology. All Rights Reserved.

Export of this software from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

Copyright 1993 by OpenVision Technologies, Inc.

Copyright (C) 1998 by the FundsXpress, INC.

All rights reserved.

Export of this software from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

Copyright (c) 1995-2001 International Business Machines Corporation and others

All rights reserved.

Copyright (c) 1990-2003 Sleepycat Software. All rights reserved.

Copyright (c) 1995, 1996 The President and Fellows of Harvard University. All rights reserved.

Copyright (c) 1998-2004 The OpenSSL Project. All rights reserved.

Unless otherwise noted, the companies, organizations, products, domain names, e-mail addresses, logos, people, places, and events depicted in examples herein are fictitious. No association with any real company, organization, product, domain name, e-mail address, logo, person, place, or event is intended or should be inferred.

Revision History

June 2004 - Rev A

July 2004 - Rev B

September 2004 - Rev C

October 2004 - Rev D - new Hardware release

October 20, 2004 - Rev E - added safety notices

December, 2004 - Rev F - updated License notice, added admonishment

March 2005 - Rev G

April 2005 - Rev J - hot-swap procedure for disks

October 2005 - Rev K - support for Software Release 2.0/2.1

March 2006 - Rev L - support for Software Release 2.3

August 2006 - Rev M, updates for Software Release 2.4

September 2006 - Rev N, new links to multiple Users Guides

October 2006 - Rev P, updates for Related-Manuals links

March 2007 - Rev Q, streamline the hardware-features list

May 2007 - Rev R, clarify LED states

December 2007 - Rev S, updates for Software Release 3.0.0

February 2008 - Rev T, clarified Console-cable pinouts for Release 2.7.1

March 2008 - Rev U, updates for Software Release 3.1.0; apply F5 documentation format

August 2008 - Rev V, clarify Disk labels

October 2008 - Rev W, re-brand the OS

April 2009 - Rev X, move software version number up to doc-set index
November 2009 - Rev Y, change chassis names
September 2010 - Rev Z, updates for Software Release 5.2.0
December 2010 - Rev AA, minor updates for Software Release 5.3.0
June 2011 - Rev AB, updates for Software Release 6.0.0
September 2011 - Rev AC, updates for Software Release 6.1.0



Table of Contents

I

Introduction

| | |
|-------------------------------------|-----|
| Audience for this Manual | I-3 |
| Document Conventions | I-3 |
| Related Documents | I-3 |
| Safety and Regulatory Notices | I-4 |
| Class A ITE Label | I-4 |
| Qualified Personnel Warning | I-4 |
| Environmental | I-5 |
| Power | I-6 |
| Contacting Customer Service | I-8 |

2

Unpacking and Installing the Switch

| | |
|---------------------------------------|------|
| Safety Instructions | 2-13 |
| Tools and Equipment | 2-13 |
| Verifying Shipment | 2-14 |
| Unpacking the Switch | 2-14 |
| Installing the Rack-Mount Rails | 2-15 |
| Rack-Mounting the Switch | 2-16 |
| Attaching the Power Cord | 2-17 |
| Powering Up the Switch | 2-17 |
| Cabling | 2-17 |

3

Connecting the Switch to the Network

| | |
|--|------|
| Management Interfaces | 3-21 |
| Connecting the Console Port | 3-21 |
| Booting the Switch | 3-22 |
| Sample: Booting a Non-Replacement Switch | 3-22 |
| Preparing for Switch Replacement | 3-24 |
| Installing a Redundant Peer or Cluster | 3-27 |
| Sample: Replacing a Redundant Peer | 3-28 |
| Connecting the Ethernet Management Port | 3-32 |

4

Maintenance

| | |
|--------------------------------------|------|
| Powering Down the ARX-1000 | 4-35 |
| POST Diagnostics | 4-35 |
| LED Status Indicators | 4-38 |
| Status LEDs | 4-38 |
| Ethernet-Port Link Status LEDs | 4-39 |
| Hard-Drive (HD) LED | 4-39 |

A

Removing a Hard Disk

| | |
|--|------|
| Before You Begin | A-43 |
| Removing the Drive | A-44 |
| Silencing the RAID Alarm | A-45 |
| Replacing the Disk Drive | A-45 |
| Incorporating the Disk into the RAID | A-45 |
| Monitoring the Rebuild | A-45 |



I

Introduction

- [Audience for this Manual](#)
- [Document Conventions](#)
- [Related Documents](#)
- [Safety and Regulatory Notices](#)
- [Contacting Customer Service](#)

Audience for this Manual

This manual is intended for field engineers and network administrators responsible for setting up and connecting the switch to a network at an enterprise data center.

Document Conventions

This manual uses the following conventions, when applicable:

- `consoleas` text represents system output
- **bold** text represents user input
- *italic* text appears for emphasis, new terms, and book titles

◆ Note

Notes provide additional or helpful information about the subject text.

◆ Important

Important notices show how to avoid possible service outage or data loss.

◆ WARNING

Warnings are instructions for avoiding damage to the equipment.

◆ DANGER

Danger notices help you to avoid personal injury.

Related Documents

In addition to this guide, the following F5 Data Solutions documentation is available:

- *ARX-2000 Quick Installation*
- *ARX CLI Reference*
- *ARX CLI Network-Management Guide*
- *ARX CLI Storage-Management Guide*
- *ARX CLI Maintenance Guide*

Safety and Regulatory Notices

◆ Important

The ambient room temperature range that the unit can operate in is 5 – 35° C.

◆ Important

Do not block power supply vents or otherwise restrict airflow when installing unit in rack.

◆ WARNING

Mechanical loading of rack should be considered so that the rack remains stable and unlikely to tip over.

Class A ITE Label

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

Qualified Personnel Warning

◆ WARNING

Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

◆ ATTENTION

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

Environmental

High Temperature Warning

◆ WARNING

To prevent the switch from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 104° F (40° C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.

◆ ATTENTION

Pour éviter une surchauffe du commutateur, ne pas le faire fonctionner dans un local dont la température ambiante dépasse le maximum recommandé de 40 °C (104 F). Pour faciliter la circulation d'air, aménager un dégagement d'au moins 7,6 cm (3 pouces) autour des bouches d'aération.

Restricted Area Warning

◆ WARNING

This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

◆ ATTENTION

Cet appareil est à installer dans des zones d'accès réservé. Ces dernières sont des zones auxquelles seul le personnel de service peut accéder en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité. L'accès aux zones de sécurité est sous le contrôle de l'autorité responsable de l'emplacement.

Warning for Rack-Mounting and Servicing

◆ WARNING

To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.

- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

◆ ATTENTION

Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel:

- Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas.
- Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas.
- Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.

Power

International Power Cord Requirements

International power cords should have the following characteristics-

- Maximum length: 4.5 m/15 feet
- Female End: IEC-320-C13
- Capacity: 10A/250V
- Nominal Conductor size(s): 1.0mm²
- Approvals: Appropriate to the country in which it is to be used.

Power Cord Usage

◆ WARNING

The power supply cords were designed to be connected and used for F5 devices, and the safety for this purpose has been confirmed.

Please do not use them for other devices or usages. There may be danger of causing a fire or an electric shock..

注意 - 添付の電源コードを他の装置や用途に使用しない。

添付の電源コードは本装置に接続し、使用することを目的に設計され、その安全性が確認されているものです。決して他の装置や用途に使用しないで下さい。火災や感電の原因となる恐れがあります。

Electric Shock Warning

DANGER

An ARX-2000 configured with two power supplies has two power cords. If you must remove AC power from the system, disconnect both power cords before servicing the system.

DANGER

Cette l'unité ARX-2000 peut être munie de deux cordons d'alimentation. Pour éviter les risques d'électrocution, débrancher les deux cordons d'alimentation avant de réparer l'unité.

SELV Circuit Warning

WARNING

The ports labeled LINK, 1/1 through 1/6, CONSOLE, MGMT, MIRROR, and DEBUG are safety extra-low voltage (SELV) circuits. SELV circuits should only be connected to other SELV circuits.

ATTENTION

Les ports étiquetés LINK, 1/1 through 1/6, CONSOLE, MGMT, MIRROR, et DEBUG sont des circuits de sécurité basse tension (safety extra-low voltage ou SELV). Les circuits SELV ne doivent être interconnectés qu'avec d'autres circuits SELV.

Circuit Breaker (15A)

WARNING

This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).

ATTENTION

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifier qu'un fusible ou qu'un disjoncteur de 120 V alt., 15 A U.S. maximum (240 V alt., 10 A international) est utilisé sur les conducteurs de phase (conducteurs de charge).

Power Supply Disconnection Warning

◆ WARNING

Before working on a chassis or working near power supplies, unplug the power cord on AC units.

◆ ATTENTION

Avant de travailler sur un châssis ou à proximité d'une alimentation électrique, débrancher le cordon d'alimentation des unités en courant.

Battery Handling Warning

◆ WARNING

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

◆ ATTENTION

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

Contacting Customer Service

You can use the following methods to contact F5 Networks Customer Service:

| | |
|---|--|
| F5 Networks Online Knowledge Base Online repository of answers to frequently-asked questions. | http://support.f5.com |
| F5 Networks Services Support Online Online customer support request system | https://websupport.f5.com |
| Telephone | Follow this link for a list of Support numbers: http://www.f5.com/training-support/customer-support/contact/ |



2

Unpacking and Installing the Switch

This chapter describes the following topics and tasks:

- [Safety Instructions](#)
- [Tools and Equipment](#)
- [Verifying Shipment](#)
- [Unpacking the Switch](#)
- [Installing the Rack-Mount Rails](#)
- [Rack-Mounting the Switch](#)
- [Attaching the Power Cord](#)
- [Powering Up the Switch](#)
- [Cabling](#)

Safety Instructions

Observe the following safety guidelines to avoid personal injury or damage to equipment when installing or operating the switch:

DANGER

Never assume that power is disconnected from a circuit; always check.

Before installing the switch, locate the power ON/OFF toggle on the back of the switch and make sure it is set to OFF.

Disconnect any power or external cables before moving the switch.

Disconnect the power cord before servicing the unit to avoid electric shock.

Tools and Equipment

You need the following equipment for unpacking, rack-mounting, and installing the switch:

- Utility knife (optional, for the packaging)
- Phillips screwdriver for #10 screws
- A laptop or PC to use as a serial console
- Customer-supplied standard 19-inch EIA rack

Note

Older revisions of the rails require a 3/8-inch nut driver in addition to the equipment above.

Verifying Shipment

The ARX-1000 shipment includes the 2U ARX-1000 itself and an Accessory Kit. The Accessory Kit is packed on top of the switch. Check the contents of the shipping crate to verify complete shipment:

- 1 15-Amp AC power cord with 8-ft. (2.4384-Meter) cable
- 1 250V locking power cord (an alternative to the above)
- 1 8-ft. (2.4384-M) crossover cable (for the Console) with RJ-45-to-DB9 adapter
- 2 mounting rails, 1 left and 1 right
- 2 sets of screws for mounting the rails to the rack: 12 #8 screws and 12 #10 screws
- 2 sets of Tinnerman nut retainers (12 nuts per set); each set fits a different type of rack rail
- *ARX-1000 Quick Installation Card*
- *ARX-1000 Hardware Installation Guide* (this manual)

Unpacking the Switch

The ARX-1000 switch is shipped in a single box with all components installed. The switch weighs approximately 35 lb. (without packaging).

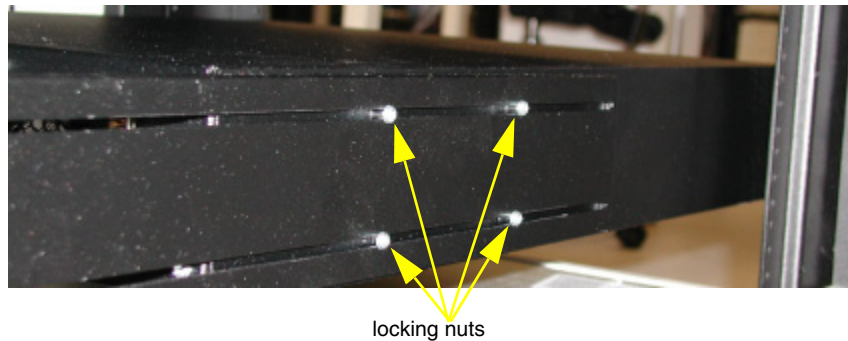
Unpack the switch as follows:

1. First inspect the box for any shipping damage.
2. Open the box (top flaps) and remove the Accessory Kit.
3. Check the 'shock watch' sticker on the inside of the packaging. If it is red, the equipment may be damaged from some physical shock (such as a drop).
4. Verify the contents of the Accessory Kit (contents listed above).
5. Carefully lift the switch and separate rack-mount rails out of the box.

Installing the Rack-Mount Rails

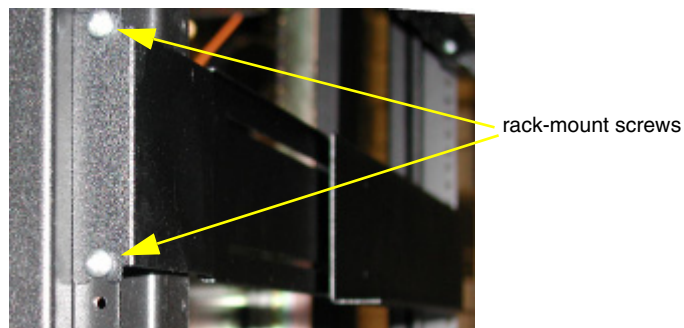
Before you install the switch, you must first assemble and install the rack-mount rails used to support the switch in a standard EIA rack. The rails are shipped with the switch unit.

1. Align each rail edge flush against the rack, aligning the screw holes.
2. If necessary, adjust the depth of the rails by loosening or tightening the locking screws with a Phillips-head screwdriver.



3. Secure the rails in place on both ends of the rack with the rack-mount screws (4 per rail) shipped in the accessory kit:
 - a) Place the bottom screws loosely in the rack. If there are no threads in the rack rails, thread the screws through the Tinnerman nut retainers provided in the accessory kit.
 - b) Set the rails on the bottom screws.
 - c) Insert and tighten the remaining screws.
 - d) Securely tighten the bottom screws.

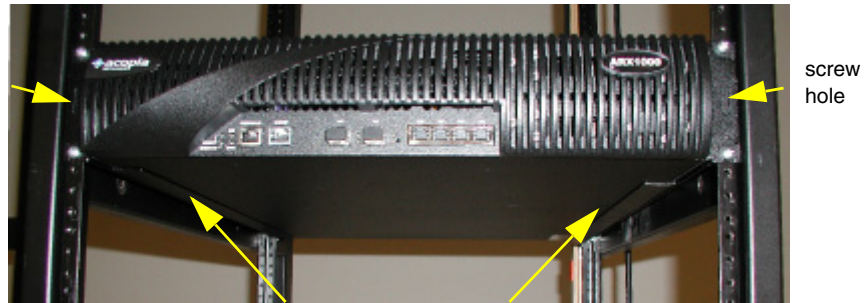
Figure 2.1 *Installing the Rack-Mount Rails*



Rack-Mounting the Switch

1. Holding the switch firmly, align the switch (front panel view) with the rack rails.
2. Carefully slide the switch into place on the rails.

Figure 2.2 Aligning Switch with Rack Rails



Firmly grip the switch edges and slide the switch into place on the rails.

3. Secure the switch to the rails by putting a screw through each ear on the front of the ARX. This guards against the switch sliding out in the event of an extreme earthquake.

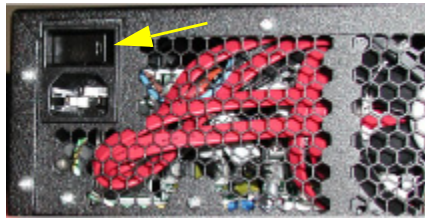
Attaching the Power Cord

Locate the power ON/OFF toggle switch on the back of the switch and ensure it is set to the OFF position.

◆ DANGER

In the event that AC power must be removed from the system, disconnect the power cord before servicing the unit to avoid electric shock.

Figure 2.3 ON/OFF Power Switch (Rear View)



Powering Up the Switch

◆ WARNING

Before applying power, ensure that the AC outlet to the switch is properly grounded.

To power up the switch, turn the ON/OFF toggle switch(es) to the ON position.

Cabling

You can cable the client/server ports before or after the switch is connected to the network.

Ethernet cables are supplied by the customer. For cable specifications and requirements, see the *ARX Hardware Reference Guide*.



3

Connecting the Switch to the Network

This chapter describes how to connect the ARX to a console terminal and boot the switch for the first time. It contains the following sections:

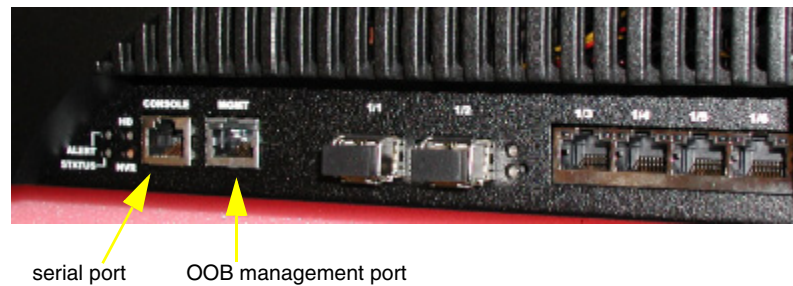
- [Management Interfaces](#)
- [Connecting the Console Port](#)
- [Booting the Switch](#)
- [Connecting the Ethernet Management Port](#)

Management Interfaces

As stated earlier, the switch provides the following management ports:

- Console - Serial Console port for connecting a console terminal, and
- Mgmt - 10/100 Ethernet port for connecting an out-of-band (OOB) management station

Figure 3.1 ARX-1000 Front Panel View



serial port

OOB management port

During the initial-boot process described in this chapter, you can only access the serial (Console) port. You configure the OOB management port ("MGMT") as part of the procedures in this chapter.

Connecting the Console Port

Set the following console-terminal parameters to match those on the Console port:

- 9600 baud rate (default)
- XON-XOFF flow control
- 8 data bits
- 1 stop bit parity

Connect the console terminal to the serial Console port (RJ-45) on the front panel. An RJ-45 to DB9 adapter is included in the installation kit if you want to connect to your management station's serial DB9 port.

Booting the Switch

The *initial-boot script* runs automatically at switch start-up. It prompts for basic configuration and security information required to access the switch and manage it remotely.

At the console terminal, boot the switch as follows:

1. Power-on the switch (as shown in *Powering Up the Switch, on page 2-17*). After some boot-up messages, the following prompt appears:
Press <Enter> to start the Switch Configuration Wizard.

This may take several minutes.

2. Press <Enter> as prompted.

Several questions appear, prompting you for basic network information (such as management-IP address, mask, and gateway). These questions comprise the initial-boot script. Answer these questions as they come up. Examples and instructions appear in the subsections below.

Sample: Booting a Non-Replacement Switch

This sample shows the simplest initial-boot scenario, for a new (non-replacement) switch that is either standalone or the *first* member of a redundant pair. The sample answers are not necessarily appropriate to the following scenarios:

- this replaces a defunct switch,
- this will join a running switch as its redundant peer, or
- this switch is being re-installed after F5 personnel performed a “Manufacturing Installation” on a previously-running switch.

Later sections discuss these contingencies and how to handle each of them. The answers below apply to the simplest case only. Sample answers are shown in bold text:

F5 ARX Startup

This F5 ARX switch does not currently have critical system information programmed. The following wizard prompts you for this information. You can connect to the switch through the out-of-band management interface when you finish.

To restart the configuration program, enter 'r' at any prompt.

The switch's management port requires an IP address and mask.

1. Enter the management port IP address
in the format nnn.nnn.nnn.nnn or 'none'. # **10.1.49.60**
2. Enter the management port subnet mask
in the format nnn.nnn.nnn.nnn.(default=255.0.0.0) # **255.255.255.0**

The switch's management port requires a gateway IP address.

3. Enter the gateway IP address for the management interface

in the format nnn.nnn.nnn.nnn or 'none'. # **10.1.49.1**

A name server address must be assigned so that the software license can be activated.

4. Enter the DNS name server IP address to access the license server in the format nnn.nnn.nnn.nnn. # **10.1.49.29**

A switch replacement requires additional configuration questions.

5. Are you doing a switch replacement?
in the format 'yes' or 'no'.(default=no) # **no**

The base registration key is used to activate the software license for this system.

6. Enter the switch's base registration key
in the format xxxxxxx-xxxxxx-xxxxx-xxxx-xxxxxxx. (default=A362247-945361-27183-5068-9388182) #
<Enter>

The crypto-officer is the most privileged user in the system.

7. Enter the crypto-officer username
in the format text (1-28 characters). # **admin**
8. Enter the crypto-officer password
in the format text (6-28 characters). # **mypassword**
Confirm the crypto-officer password # **mypassword**

A system password is required for access to the master key.

9. Enter a system password
in the format text (12-28 characters). # **d0uble\$ecRET**
Confirm the system password # **d0uble\$ecRET**

The master key is used to encrypt critical security parameters.

10. Enter the master key
in the format base64-encoded key or keyword 'generate'.(default=generate) # <Enter>

The system displays a configuration summary, for example:

```
Configuration Summary
Management IP Address    10.1.49.60
Management IP Mask      255.255.255.0
Management Gateway      10.1.49.1
DNS IP Address          10.1.49.29
Chassis GUID            e5d870ae-571e-1352-916b-ef324fbc05a2
Chassis Base Reg Key    A362247-945361-27183-5068-9388182
Crypto-officer Username admin
Crypto-officer Password #####
```

Enter 'yes' to load configuration or 'r' to redo the interview #**yes**

You have completed the switch startup configuration.
The switch will now initialize the local database.
When the login prompt appears, log into the switch using
the crypto-officer's username and password.

Closing configuration file.
Processing configuration file. (boot-config)

...

The boot-up prompts continue until you reach the "Username" prompt. Confirm that an administrator can log in by using the Crypto-Officer username and password that you entered in the initial-boot script. For example:

...

User Access Authentication

```
Username: admin
Password: mypassword
SWITCH>
```

The switch is now ready for configuration through the CLI or ARX Manager. See the *ARX Manager Quick Start: Network Setup* or the *ARX® CLI Network-Management Guide* (on the documentation CD provided with the switch) for configuration instructions.

Preparing for Switch Replacement

For switch replacement, the above process becomes more complicated.

You can replace a single switch or a switch that is a member of a redundant pair. The interview that runs during installation is the same regardless of the type of replacement. For a single switch replacement, there are a few things you must have done prior to the switch failing. This includes saving your running and global configs, UUID, and master key and associated passwords as described in the *ARX Site Planning Guide, Best Practice: Regularly Saving the Configuration*, on page 1-64. The only other differences between replacing a single switch and replacing a member of a redundant pair is that for a single switch, a re-import is required at the appropriate point during configuration. Since with a single switch installation, the configuration is not saved on a backup switch, you have to manage what you do with these key pieces of configuration data *prior* to the switch's failing.

Choosing Switch Replacement

The initial-boot script asks if this is a switch replacement. Answer **yes** to invoke the questions that are required to replace the failed switch. For example,

```
...
A switch replacement requires additional configuration questions.
6. Are you doing a switch replacement?
   in the format 'yes' or 'no'.(default=no) # yes
```

Matching the Private Subnet

The next set of questions ask for the switch's *private subnet*, the *private VLAN* for that subnet, and the VLAN for a private *metalog subnet*. If the failed switch was in a redundant pair and/or Resilient-Overlay Network (RON), the private subnets of the replacement switch should match those of the switch that failed. Each ARX uses its private subnet for communication with other ARXes in the same RON and/or the switch's redundant peer. All private subnets in the RON and/or pair are carried by the same VLAN. This private VLAN, and the separate metalog VLAN, must be reserved for ARX traffic only.

The private-subnet and VLAN information appears at the top of a the failed switch's show running-config output. For example, this is the top of a running-config file from a failed switch. The private-subnet information is highlighted in bold text:

```
; ARX-1000+
; Version 6.00.000.12535 (Feb  5 2010 18:16:05) [nbuilds]
; Database version: 502000.21
; Generated running-config Sun Feb 14 01:55:01 2011
; System UUID  e5d870ae-571e-1352-916b-ef324fbc05a2
; ip private vlan internal 1004 metalog 1005 subnet 169.254.196.0 255.255.255.0
;
terminal character-set unicode-utf-8
;===== vlan =====
config
  vlan 158
...
```

Entering the Private Subnet

Enter the private subnet and VLAN of the failed switch, as well as the VLAN for the private metalog subnet. The VLANs must be unique in your network, shared only amongst the ARXes in the RON. The defaults (1002 and 1003) may be sufficient for your installation. For example:

```
...
The switch's internal subnet requires an IP address and mask.
7. Enter the switch's private IP address
   in the format nnn.nnn.nnn.nnn.(default=169.254.6.0) # 169.254.196.0

8. Enter the switch's private subnet mask
   in the format nnn.nnn.nnn.nnn.(default=255.255.255.0) # <Enter>

The private subnet VLAN is used externally for redundancy traffic.
Be sure this value does not conflict with existing VLAN IDs.
9. Enter the switch's private subnet VLAN
   in the format integer [1-4095].(default=1002) # 1004 <Enter>

The private subnet metalog VLAN is used for storing file-change
logs on battery-backed NVRAM, possibly on a redundant peer.
Be sure this value does not conflict with existing VLAN IDs.
10. Enter the switch's private subnet metalog VLAN
    in the format integer [1-4095].(default=1003) # 1005 <Enter>
```

Finding the UUID of the Failed Switch

When a switch imports storage from back-end filers, it marks each share with its Universally-Unique ID (UUID). A replacement switch must use the same UUID or it rejects all of the shares used by its predecessor. You also need to set the UUID if the switch is brought back to its factory defaults; a “Manufacturing Installation” by F5 personnel resets the switch and its UUID.

The UUID appears at the top of a switch's show running-config output. For example, this is the top of a running-config file from a switch named “gffstnA.” The UUID is highlighted in bold text:

```
; ARX-1000+
; Version 6.00.000.12535 (Feb  5 2010 18:16:05) [nbuilds]
; Database version: 600000.21
```

Chapter 3

Connecting the Switch to the Network

```
; Generated running-config Sun Feb 14 01:55:01 2010
; System UUID  e5d870ae-571e-1352-916b-ef324fbc05a2
; ip private vlan internal 1004 metalog 1005 subnet 169.254.196.0 255.255.255.0
;
terminal character-set unicode-utf-8
;===== vlan =====
config
  vlan 158
...
```

If the failed switch was a member of a Resilient-Overlay Network (RON), you can alternatively use `show ron` from any other RON member. This shows the UUID even if the chassis is no longer online. For example, the following command (run on another switch in the RON) shows the UUID for a failed chassis, “gffstnA.” Again, the UUID is highlighted in bold text:

bstnA# `show ron`

| Switch Name Status | HA Peer Switch UUID | Uptime Management Addr |
|-----------------------|---|--------------------------------|
| bstnA ONLINE | (None) d9bdece8-9866-11d8-91e3-f48e42637d58 | 0 days, 02:07:57 10.1.1.7 |
| gffstnA OFFLINE | (None) e5d870ae-571e-1352-916b-ef324fbc05a2 | 0 days, 01:59:42 10.1.49.60 |
| minturnA ONLINE | (None) 3d17e8ce-571e-11dc-9852-ef323fbb290f | 0 days, 02:00:16 10.1.27.69 |
| provA ONLINE | (None) db922942-876f-11d8-9110-8dtu78fc8329 | 0 days, 02:08:11 10.1.38.19 |
| prtlndB ONLINE | prtlndB 876616f6-79ac-11d8-946f-958fcb4e6e35 | 0 days, 02:07:59 10.1.23.11 |
| prtlndB ONLINE | prtlnDA 64dcab94-a2b6-11d8-9d25-bf2c991c83f9 | 0 days, 00:18:55 10.1.23.12 |

bstnA# ...

Applying the UUID

The initial-boot script has a prompt for the UUID (shown in the example above). This is where you enter the UUID of the replaced switch. For example,

```
...
The UUID should only be entered if this chassis is replacing a failed chassis
and the entered UUID should match the UUID of the failed chassis.
11. Enter the switch's UUID
    in the format
xxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxxx.(default=6df0854c-6af4-11d8-954a-f844c83bc5f3) #
e5d870ae-571e-1352-916b-ef324fbc05a2
...
```

Important

No two running chassis should ever share the same UUID. Only enter the UUID in a switch-replacement scenario.

Installing a Redundant Peer or Cluster

If you are installing the second switch in a redundant pair (called an ARX cluster) or if you are configuring a second ARX cluster in a Disaster Recovery (DR) configuration, you need to provide additional information to the initial-boot script. All members of the cluster share a common master key.

◆ Note

A master key is an encryption key for all critical-security parameters (CSPs), such as administrative passwords.

Redundant switches must use the same master key because they share the same users, groups, and passwords. In the case of a DR configuration, all four ARX devices must be configured with a common master key.

At the peer that is currently installed, enter the `show master-key` command to create an encrypted copy of the master key.

The CLI prompts you for two passwords:

- System Password is a password entered at initial-boot time (see [Sample: Booting a Non-Replacement Switch, on page 3-22](#)). It is 12-32 characters long. This validates that you have permission to access the master key.
- Wrapping Password is set with this command. The security software uses this to encrypt (and later decrypt) the master-key string.

Enter 12-32 characters. At least one character in this password must be a number (0-9) or a symbol (!, @, #, \$, and so on).

Save this password: you will need it to decrypt the master key later, on the new switch.

This command outputs a base64-encoded string that is the encrypted master key. Save this string *and* the wrapping password that you set in the command.

For example, this shows the master key on a switch named “gffstnB:”

```
gffstnB# show master-key
Master Key System Password: %super$cretpw
Wrapping Password: an0ther$cretpw
Validate Wrapping Password: an0ther$cretpw
```

Encrypted master key:

```
2oftVCwAAAAgAAAApwazSRFd2ww/H1pi7R7JMDZ9SoIg4WGA/XsZP+HcXjsIAAAADDRbM
CxE/bc=
gffstnB# ...
```

Applying the Master Key

As shown earlier, there is a prompt for the master key in the initial-boot script. You can answer this prompt with the encrypted master key; the script then prompts for the wrapping password. For example,

```
...
The master key is used to encrypt critical security parameters.
15. Enter the master key
    in the format base64-encoded key or keyword 'generate'.(default=generate) #
2ofTVcWAAAAGAAAApwazSRFd2ww/H1pi7R7JMDZ9SoIg4WGA/XsZP+HcXjsIAAAADDRbMCxE/bc=

The wrapping password is used to encrypt and decrypt the master key.
16. Enter the wrapping password
    in the format text (6-28 characters). # anOther$ecretpw
    Confirm the wrapping password # anOther$ecretpw
...
```

Sample: Replacing a Redundant Peer

This sample script uses the private subnet, the UUID, and the master key to replace a failed peer.

F5 ARX Startup

This F5 ARX switch does not currently have critical system information programmed. The following wizard prompts you for this information. You can connect to the switch through the out-of-band management interface when you finish.

To restart the configuration program, enter 'r' at any prompt.

The switch's management port requires an IP address and mask.

1. Enter the management port IP address
in the format nnn.nnn.nnn.nnn or 'none'. # **10.1.23.11**
2. Enter the management port subnet mask
in the format nnn.nnn.nnn.nnn.(default=255.0.0.0) # **255.255.255.0**

The switch's management port requires a gateway IP address.

3. Enter the gateway IP address for the management interface
in the format nnn.nnn.nnn.nnn or 'none'.(default=10.1.23.1) # **10.1.23.1**

A name server address must be assigned so that the software license can be activated.

4. Enter the DNS name server IP address to access the license server
in the format nnn.nnn.nnn.nnn. # **10.51.1.29**

This next question invokes the questions for switch replacement:

A switch replacement requires additional configuration questions.

5. Are you doing a switch replacement?
in the format 'yes' or 'no'.(default=no) # **yes**

The switch's internal subnet requires an IP address and mask.

6. Enter the switch's private IP address
in the format nnn.nnn.nnn.nnn.(default=169.254.52.0) # **169.254.196.0**
7. Enter the switch's private subnet mask
in the format nnn.nnn.nnn.nnn.(default=255.255.255.0) # **<Enter>**

The private subnet VLAN is used externally for redundancy traffic.

Be sure this value does not conflict with existing VLAN IDs.

8. Enter the switch's private subnet VLAN
in the format integer [1-4095].(default=1002) # **1004 <Enter>**

The private subnet metalog VLAN is used for storing file-change logs on battery-backed NVRAM, possibly on a redundant peer. Be sure this value does not conflict with existing VLAN IDs.

9. Enter the switch's private subnet metalog VLAN in the format integer [1-4095].(default=1003) # 1005 <Enter>

The UUID should only be entered if this chassis is replacing a failed chassis and the entered UUID should match the UUID of the failed chassis.

10. Enter the switch's UUID in the format xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx.(default=6df0854c-6af4-11d8-954a-f844c83bc5f3) # e5d870ae-571e-1352-916b-ef324fbc05a2

The base registration key is used to activate the software license for this system

11. Enter the switch's base registration key in the format xxxxxxxx-xxxxxx-xxxxx-xxxx-xxxxxxx.(default=A362247-945361-27183-5068-9388182) # <Enter>

The crypto-officer is the most privileged user in the system.

12. Enter the crypto-officer username in the format text (1-28 characters). # admin
13. Enter the crypto-officer password in the format text (6-28 characters). # mypassword
Confirm the crypto-officer password # mypassword

A system password is required for access to the master key.

14. Enter a system password in the format text (12-28 characters). # d0uble\$ecRET
Confirm the system password # d0uble\$ecRET

This is the master-key question, where you use the encrypted master key and the wrapping password from the redundant peer:

The master key is used to encrypt critical security parameters.

15. Enter the master key in the format base64-encoded key or keyword 'generate'.(default=generate) # 2oftVCwAAAAgAAAApwazSRFd2ww/H1pi7R7JMDZ9SoIg4WGA/XsZP+HcXjsIAAAADDRbMCxE/bc=

The wrapping password is used to encrypt and decrypt the master key.

18. Enter the wrapping password in the format text (6-28 characters). # an0ther\$ecretpw
Confirm the wrapping password # an0ther\$ecretpw

Configuration Summary

| | |
|-----------------------|---------------|
| Management IP Address | 10.1.49.60 |
| Management IP Mask | 255.255.255.0 |
| Management Gateway | 10.1.49.1 |
| DNS IP Address | 10.51.1.29 |

| | |
|---------------------|---------------|
| Power Configuration | 110 |
| Private IP Subnet | 169.254.196.0 |
| Private IP Mask | 255.255.255.0 |

| | |
|----------------------|------|
| Private VLAN | 1004 |
| Private Metalog VLAN | 1005 |

| | |
|--------------|--------------------------------------|
| Chassis GUID | e5d870ae-571e-1352-916b-ef324fbc05a2 |
|--------------|--------------------------------------|

Chapter 3

Connecting the Switch to the Network

```
Chassis Base Reg Key      A362247-945361-27183-5068-9388182
Switch Password           #####
Switch MasterKey 2oftVCwAAAAGAAAapwazSRFd2ww/H1pi7R7JMDZ9SoIg4WGA/XsZP+HcXjsIAAAADDRbMCxE/bc=
Wrapping Password        #####
Crypto-officer Username   admin
Crypto-officer Password   #####
```

Enter 'yes' to load configuration or 'r' to redo the interview #yes

You have completed the switch startup configuration.
The switch will now initialize the local database.
When the login prompt appears, log into the switch using
the crypto-officer's username and password.

Closing configuration file.
Processing configuration file. (boot-config)

...

User Access Authentication

Username: admin
Password: mypassword
SWITCH>

The switch is now ready for configuration through the ARX Manager or CLI.

To join it with its redundant peer, you can use the standard practice of copying and applying the failed switch's running config:

```
SWITCH> enable
SWITCH# copy ftp://juser:jpasswd@ftp.wmed.com/a1kconfig scripts running
SWITCH# show scripts
```

```
scripts
  running                Apr 12 17:45  2.1k
```

```
SWITCH# run scripts running
```

The running-config script set up all local parameters, such as the hostname and the network settings:

```
SWITCH#; ARX-1000+
SWITCH#; Version 6.00.000.12535 (Feb  5 2011 18:16:05) [nbuilds]
SWITCH#; Database version: 502000.21
SWITCH#; Generated running-config Sun Feb 14 01:55:01 2010
SWITCH#; System UUID e5d870ae-571e-1352-916b-ef324fbc05a2
SWITCH#; ip private vlan internal 1004 metalog 1005 subnet 169.254.196.0 255.255.255.0
SWITCH#;
SWITCH#terminal character-set unicode-utf-8
SWITCH#;===== vlan =====
SWITCH#config
SWITCH#  vlan 158
SWITCH#    description "personnel dept."
SWITCH#    members 1/3 to 1/3
SWITCH#...
SWITCH#;===== system =====
SWITCH#config
```

```
SWITCH(cfg)# clock timezone America New_York
SWITCH(cfg)# hostname gffstnA
gffstnA(cfg)# ip domain-list wwmed.com
gffstnA(cfg)# ...
gffstnA(cfg)# exit
gffstnA#
```

If you copied the private subnet and mask from the defunct switch, this completes the switch replacement. Otherwise, the new switch learns its private subnet from its peer, re-configures itself, and reboots. (A reboot is necessary to change the private subnet of an ARX.)

See the ARX[®] *CLI Network-Management Guide* for detailed configuration instructions.

Connecting the Ethernet Management Port

After you boot the switch, you can connect the Ethernet out-of-band management port to a management station or network. You can use this interface to access the Graphical User Interface (GUI) or the Command Line Interface (CLI). To access the GUI, direct a web browser to the interface over HTTPS (for example, “https://10.1.49.60/”). Use the crypto-officer username and password, entered above, to log in. For the CLI, use SSH with the interface and the crypto-officer username (for example, “ssh admin@10.1.49.60”).

The *ARX GUI Quick Start: Network Setup* manual contains instructions for getting started with the GUI, and the *ARX[®] CLI Network-Management Guide* contains instructions and best practices for using the CLI.



4

Maintenance

This chapter describes the ARX-1000 hardware power-down sequence, power-on self-test (POST) diagnostics, and module and port status indicators (LEDs) and their associated conditions.

- [Powering Down the ARX-1000](#)
- [POST Diagnostics](#)
- [LED Status Indicators](#)

Powering Down the ARX-I000

The ARX-1000 requires a manual power-down sequence, which cuts power from all systems including the NVRAM. Once the NVRAM loses power from an external source, it uses a battery backup for up to 72 hours.

For details on powering down a single ARX and a redundant pair, consult the *ARX CLI Maintenance Guide*, Powering Down the ARX, on page 13-1. This prepares the ARX pair for a planned power outage.

For power outages of greater than 72 hours, contact F5 Support.

POST Diagnostics

When the switch reboots and the system powers up, POST (power-on self-test) diagnostics run to verify basic hardware integrity. You can view any hardware failures at the system console through the *show version* or *show chassis* commands. See the following sample output.

Figure 4.1 Show Version Sample

```
gffstnA# show version
Copyright (c) 2002-2010 by F5 Networks, Inc. All rights reserved.
Running Release
test1.rel : Version 5.02.000.12535 (Feb  5 2010 18:16:05) [nbuids]

Armed Release
test1.rel : Version 5.02.000.12535 (Feb  5 2010 18:16:05) [nbuids]

Backup Release
test3.rel : Version 5.02.000.12535 (Feb  5 2010 18:16:05) [nbuids]

System Configuration: Version 502000.21

gffstnA uptime is 0 weeks, 0 days, 1 hours, 36 minutes.

Slot  Admin      ModuleType  ModuleState  FW Upgrade
----  -
  1   Enabled    ACM         Online       Disabled

Resource      State
-----
Switch        Up

Forwarding
Disabled
```

Figure 4.2 Show Chassis Sample

```
gffstnA# show chassis

Identification:
Hostname                               UUID
-----
gffstnA                               e5d870ae-571e-1352-916b-ef324fbc05a2
```

Chapter 4

Maintenance

Chassis:

| Chassis Type | Model Number | HW Ver. | Serial |
|--------------|--------------|---------|----------|
| ARX-1000+ | ARX1 | B 09 | 03002130 |

Private Subnet:

| VLAN | Subnet | Subnet Mask |
|------|---------------|---------------|
| 1004 | 169.254.196.0 | 255.255.255.0 |

Chassis Environment:

| Base MAC Address | Power | Chassis Revision |
|-------------------|--------|------------------|
| 00:0a:49:08:52:00 | Online | |

Logical Disk Details:

| Disk | Status | Verification Mode | Verification Rate |
|------|---------|-------------------|-------------------|
| 1 | Optimal | Automatic | 10 % |

Disk Details:

| Disk | Size | State | Transfer Rate | Model |
|-------|---------|--------|---------------|------------------|
| Bay 1 | 139.73G | Online | 1.5Gb/sec | WD1500HLFS-01G6U |
| Bay 2 | 139.73G | Online | 1.5Gb/sec | WD1500HLFS-01G6U |

RAID Controller Details:

| Rebuild Rate | Max Transfer Rate | Firmware | RAID Alarm |
|--------------|-------------------|-----------|------------|
| 90 % | 1.5Gb/sec | 713S:G121 | Enabled |

Slot Environment:

| Slot | Type | State | Power | Temperature | NVR Battery | Drive |
|------|------|--------|--------|-----------------|-------------|----------|
| 1 | ACM | Online | Online | Normal (<45 C) | Good | LSI Good |

Module:

| Slot | Ports | Procs | Card | Xeon | Sibyte | Serial |
|------|-------|-------|------|-----------------|-----------------|----------|
| 1 | 7 | 5 | ACM | 3.1 GHz 4096 MB | 700 MHz 2048 MB | 03002130 |
| 1 | | | | | 700 MHz 2048 MB | |

| Slot | MAC Address | HW Version | Rework | Deviation |
|------|------------------------------|------------|--------|-----------|
| 1 | 000A49085203 to 000A49085206 | B 09 | 06 | 68,77 |

Slot Reset CPLD Keeper CPLD

| | | |
|---|---|---|
| 1 | 5 | 2 |
|---|---|---|

| Slot | Boot Version | Diag Version | BootLdr Version |
|------|----------------|----------------|-----------------|
| 1 | 2.04.003.09681 | 5.00.000.11559 | 5.00.000.11560 |

| Slot | FPGA Version | NSM Boot Version | NSM Diag Version | NSM BootLdr Version |
|------|--------------|------------------|------------------|---------------------|
| 1 | firetruck 17 | 5.01.000.11898 | 5.01.000.11898 | 5.01.000.11898 |
| 1 | hunchback 1 | 5.01.000.11898 | 5.01.000.11898 | 5.01.000.11898 |

Port Media Details:

| Slot/Port | Type | Vendor | Status |
|-----------|------|--------|--------|
|-----------|------|--------|--------|

| | | | |
|-----|-------------|---------------|------|
| 1/1 | 1000BASE-SX | FINISAR CORP. | Good |
| 1/2 | 1000BASE-SX | FINISAR CORP. | Good |

Disk Usage:

| Name | Total MB | Used MB | Free MB | Used% |
|------------------------|----------|---------|---------|-------|
| System | 2331 | 1403 | 809 | 64% |
| Releases | 5285 | 2646 | 2370 | 53% |
| Logs | 115341 | 174 | 109306 | 1% |
| Cores; DiagInfo; Lists | 8458 | 135 | 7893 | 2% |
| Scripts | 3172 | 47 | 2964 | 2% |
| Reports | 8458 | 33 | 7994 | 1% |

Temperature Details:

| Slot | Module | Sensor 1 (C) | | Sensor 2 (C) | | Sensor 3 (C) | | Sensor 4 (C) | |
|------|--------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|
| | | Local | Remote | Local | Remote | Local | Remote | Local | Remote |
| 1 | ACM | 26 | 37 | 39 | 33 | 32 | 56 | 33 | 47 |

NVR:

| NVR Battery | ECC State | NVR Size (MB) |
|-------------|-----------|---------------|
| Good | No Error | 256 |

LED Status Indicators

This section describes the ARX-1000's status LEDs, including:

- System Alert and module Status LEDs
- Hard-drive LED and NVR-battery-backup LEDs (also shown in
- Ethernet management port and user port LEDs (see Figure 7.4 on page 7-6)

Figure 4.3 ARX-1000 System LEDs

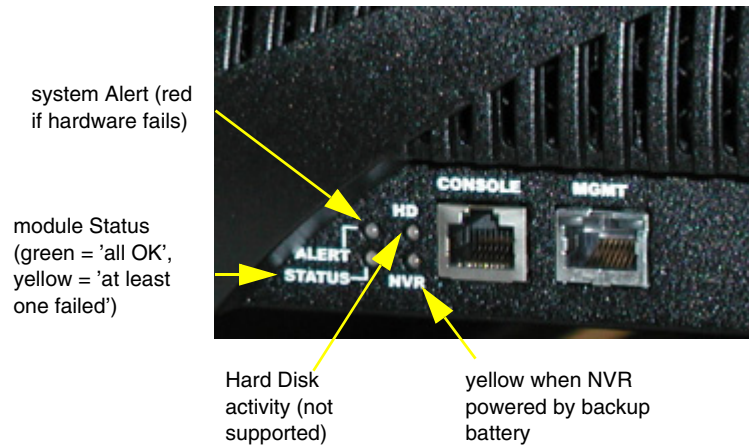
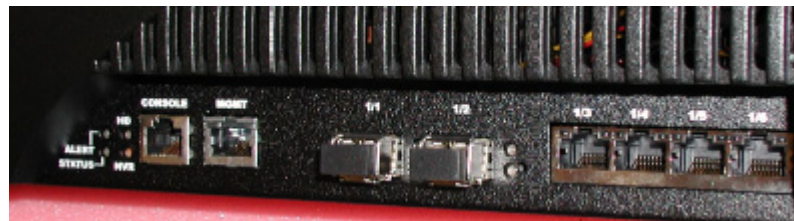


Figure 4.4 ARX-1000 Port LEDs



each port has one Activity LED (yellow) and one Link LED (green)

Status LEDs

The ARX-1000 front panel provides the following LED status indicators:

- **ALERT** — Illuminates *Red* to indicate an operational failure
- **STATUS** — Illuminates *Green* or *Yellow* based on the system's current operational state

During various module operations, LEDs display Green, Yellow, or Red with intermittent blinking patterns, depending on the state. When blinking, LEDs blink ON for a half second and OFF for a half second.

Table 4.1 describes the LED colors and blinking patterns that occur during various operational states, such as booting, diagnostics, and so on.

| ALERT | STATUS | State |
|-------|-------------------|---|
| (Off) | Green | Online |
| Red | Green (Blinking) | Failed or powering down |
| (Off) | Yellow (Blinking) | Powering up and running all POST tests. |
| (Off) | Yellow | Online Partial: at least one processor is online, at least one is not online yet. If the offline processor does not come up in 5 minutes, this changes to Failed Partial. |
| Red | Yellow | Failed Partial: at least one processor is online, but at least one other processor failed. |
| (Off) | (Off) | Power Failure |

Table 4.1 Operational States and LED Patterns

Ethernet-Port Link Status LEDs

The Ethernet ports on the ARX-1000, the MGMT port and the client/server ports, each have two LEDs in their upper corners:

- Upper left – Activity LED: blinking yellow indicates packet traffic.
- Upper right – Link-status LED: steady green indicates that the port is enabled and a link is established.

Hard-Drive (HD) LED

The hard drive (HD) LED is not supported.



A

Removing a Hard Disk

This appendix describes how to remove and replace a disk drive in the ARX-1000 chassis.

- [Before You Begin](#)
- [Silencing the RAID Alarm](#)
- [Replacing the Disk Drive](#)

Before You Begin

When returning a disk drive, power supply, or the whole ARX, you must send along the serial number for the chassis. In some cases, you also need the base MAC address for the chassis.

Use the **show chassis** command to get the serial number. If you cannot reach the CLI, read the serial number on the front, right-hand side of the chassis (under the cooling holes).

See the following example output for the **show chassis** command.

gffstnA# **show chassis**

```

Identification:
Hostname                               UUID
-----
gffstnA                               e5d870ae-571e-1352-916b-ef324fbc05a2

Chassis:
Chassis Type  Model Number                HW Ver.  Serial Number
-----
ARX-1000+    ARX1                                B 09     03002160

Private Subnet:
VLAN  Subnet                Subnet Mask
----
1004  169.254.3.0            255.255.255.0

Chassis Environment:
Base MAC Address  Power          Chassis Revision
-----
00:0a:49:08:70:00 Online         03 25

Logical Disk Details:
Disk  Status                Verification Mode  Verification Rate
-----
1     Optimal                Automatic          10 %

Disk Details:
Disk  Size                State                Transfer Rate  Model
-----
Bay 1  69.24G                Online              1.5Gb/sec     WD740GD-00FLC0
Bay 2  69.24G                Online              1.5Gb/sec     WD740GD-00FLC0

```

Removing the Drive

This is a hot-swap procedure, requiring no power-down of the switch and no loss of service.

◆ WARNING

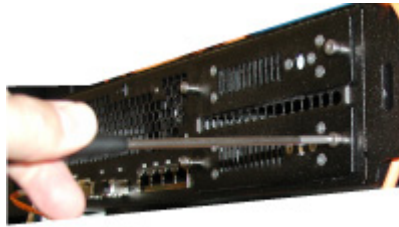
Static electricity can damage switch components. Be sure to wear antistatic wrist straps before handling disk drives.

Carefully remove the front bezel to expose the disk drives. The two replaceable drives are on the right side of the front panel, one over the other:



Each drive is held in place with two captive screws.

To remove a disk drive, use a Phillips-head screwdriver to loosen both captive screws.



Slide out the disk drive and sled from its slot in the chassis.



The chassis continues to run, in degraded state, with only one disk missing from the RAID.

Silencing the RAID Alarm

After you remove the drive, an audible alarm goes off to signal that the drive is missing. From the CLI (priv-exec mode), you can use the `raid silence` command to quiet this alarm:

```
raid silence
```

For example, the following command sequence logs into a switch at 10.1.49.60, enters `enable` to go to priv-exec mode, and silences the RAID alarm:

```
$ telnet 10.1.49.60  
Trying 10.1.49.60...  
Connected to 10.1.49.60.  
Escape character is '^']'.
```

```
Username: admin  
Password: acopia  
gffstnA> enable  
gffstnA# raid silence  
gffstnA# ...
```

Replacing the Disk Drive

To replace the disk drive, slide it into the empty slot and tighten its two captive screws. The screws should be at least finger tight for the drive to properly engage.

Incorporating the Disk into the RAID

To incorporate the disk into the RAID, use the `raid rebuild` command from priv-exec mode:

```
raid rebuild {disk1 | disk2}
```

where **disk1** | **disk2** specifies the disk to rebuild. The top disk is disk1.

For example, the following command rebuilds the lower disk:

```
gffstnA# raid rebuild disk2  
gffstnA# ...
```

Monitoring the Rebuild

A disk rebuild can take more than an hour. To monitor the progress of the rebuild, you can use the `show chassis diskuse` command to see a percentage-complete meter:

```
show chassis diskuse
```

The meter is a number in the Rebuild Progress field, under Disk Details.

Appendix A

Removing a Hard Disk

For example, the following command shows that the rebuild is 21% complete. The rebuild progress is shown in bold:

```
gffstnA# show chassis diskuse
```

Logical Disk Details:

| Disk | Status | Verification Mode | Verification Rate |
|------|---------|-------------------|-------------------|
| 1 | Optimal | Manual | 10 % |

Disk Details:

| Disk | Size | State | Transfer Rate | Model |
|-------|--------|--------------------|---------------|-----------------|
| Bay 1 | 68.50G | Online | 320MB/sec | ATLAS10K4_73SCA |
| Bay 2 | 68.50G | Rebuild 21% | 320MB/sec | ATLAS10K4_73SCA |

RAID Controller Details:

| Rebuild Rate | Max Transfer Rate | Firmware | RAID Alarm |
|--------------|-------------------|-----------|------------|
| 90 % | 320MB/sec | TL37:G117 | Enabled |

Disk Usage:

| Name | Total MB | Used MB | Free MB | Used% |
|------------------------|----------|---------|---------|-------|
| System | 2121 | 998 | 1014 | 50% |
| Releases | 4234 | 1701 | 2317 | 43% |
| Logs | 2121 | 99 | 1914 | 5% |
| Cores; DiagInfo; Lists | 8460 | 37 | 7993 | 1% |
| Reports; Scripts | 46940 | 66 | 44489 | 1% |

```
gffstnA# ...
```




Index

A

audience for this manual 1-3

B

Bezel A-41

Booting the switch 3-22

C

Cabling the client/server ports 2-17

Chassis installation

 safety instructions 2-13

 tools required 2-13

Configuring the switch 3-22

Connecting serial console port 3-21

Connecting the management port 3-32

Console connection to switch 3-22

Console port

 baud rate 3-21

 connecting 3-21

D

Diagnostics at switch bootup 4-35

Disk drives

 removing and replacing A-41

F

Front bezel A-41

FRUs

 and static electricity A-44

 disk drive A-41

I

IDE hard drive

 LEDs 4-39

L

LEDs

 conditions and blinking patterns 4-38

 front panel (fig.) 4-38

 port/link LEDs 4-39

 system status and alert 4-38

M

Management port 3-21

 connecting 3-32

MGMT interface

 location on the ARX1000 3-21

O

Operational status LEDs 4-38

P

Ports

 LEDs 4-39

 management, console 3-21

POST diagnostics 4-35

Power cords

 attaching 2-17

Powering up the switch 2-17

R

Rack-mounting the switch 2-15

Removing and replacing a disk drive A-41

Running the boot wizard 3-22

S

Safety instructions 2-13

Serial console port 3-21

Site and safety considerations 2-13

Static electricity A-44

Status indicators (LEDs) 4-38

Status LEDs 4-38

Switch boot-up 3-22

 for a redundant switch 3-27

 for a replacement switch 3-24

Switch Installation

 unpacking and installing the chassis 2-11

Switch installation

 See *Also* Switch boot-up.

 safety instructions 2-13

 tools required 2-13

Switch LEDs (fig.) 4-38

Switch management ports 3-21

Switch replacement

 See Switch Installation *and* Switch boot-up:for a replacement switch.

T

Tools for installation 2-13

U

Unpacking the switch 2-14

